

IN THE CLAIMS:

1. (Cancelled)

2. (Currently amended) A system for sensing and recording or transmitting processing conditions comprising:

a substrate having a surface, the substrate comprising sensors to measure the processing conditions of the substrate at different areas of the substrate;

one or more electronics platforms mounted to the surface of the substrate comprising signal acquisition circuitry coupled to an output of the sensors;

the one or more electronics platforms individually comprising at least one integrated circuit; and

The system of claim 1 wherein each of the one or more platforms comprise one or more legs and a shelf, the one or more legs elevating the shelf from the surface.

3. (Original) The system of claim 2 wherein the signal acquisition circuitry is upon the shelf.

4. (Currently amended) The system of ~~claim 1~~ claim 2 wherein the substrate is a wafer.

5. (Currently amended) The system of ~~claim 1~~ claim 2 wherein the substrate comprises glass.

6. (Currently amended) The system of ~~claim 1~~ claim 2 further comprising a remote data processing module.

7. (Currently amended) A system for sensing and recording or transmitting processing conditions comprising:

a substrate having a surface, the substrate comprising sensors to measure the processing conditions of the substrate at different areas of the substrate;

one or more electronics platforms mounted to the surface of the substrate comprising signal acquisition circuitry coupled to an output of the sensors;

wherein each of the one or more platforms comprise one or more legs and a shelf, the one or more legs elevating the shelf from the surface

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~~The system of claim 2~~ wherein the electronics platform further comprises data transmission circuitry comprising a transceiver, the data transmission circuitry operable to transmit the processing conditions in real time during measurement of the processing conditions to the data processing module via the transceiver.

8. (Original) The system of claim 7 wherein the transceiver transmits and receives RF signals.

9. (Original) The system of claim 7 wherein the transceiver transmits and receives IR signals.

10. (Original) The system of claim 7 wherein the transceiver inductively transmits and receives.

11. (Original) The system of claim 7 wherein the transceiver sonically transmits and receives.

12. (Original) The system of claim 7 wherein the system further comprises a data transmission cable and wherein the data transmission circuitry transmits the processing conditions over the cable.

13. (Original) The system of claim 7 wherein the data transmission circuitry is further operable to send and receive control signals to and from the data processing module.

14. (Original) The system of claim 6 wherein the data processing module comprises a microprocessor, a storage device, a display, and an input device.

15. (Currently amended) The system of ~~claim 1~~ claim 2 wherein the processing conditions measured by the sensors comprise one or more of the following conditions: temperature, pressure, flow rate, vibration, ion current density, ion current energy, and light energy density.

16. (Currently amended) The system of ~~claim 1~~ claim 2 wherein the sensors are discrete sensors mounted in or on the wafer.

17. (Currently amended) The system of ~~claim 1~~ claim 2 wherein the sensors are part of an integrated circuit formed in or on the wafer.

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18. (Currently amended) The system of ~~claim 1~~ claim 2 wherein the electronics platform further comprises a power supply.

19. (Currently amended) The system of claim 17 wherein the power supply comprises an inductive power source.

20. (Currently amended) The system of ~~claim 1~~ claim 2 further comprising an antenna connected to the wafer and electrically coupled to the signal acquisition circuitry.

21. (Withdrawn) A process condition monitoring device comprising:
a substrate having a first perimeter, the substrate comprising sensors to measure the processing conditions of the substrate at different areas of the substrate; and
an electronics module having a second perimeter, the module comprising:
signal acquisition circuitry coupled to an output of the sensors;
data transmission circuitry coupled to the signal acquisition circuitry;
a power source; and
leads connecting the substrate to the electronics module for transmitting signals between the substrate and the electronics module.

22. (Withdrawn) The monitoring device of claim 21 wherein the signal acquisition circuitry is configured to amplify an output signal of the sensors.

23. (Withdrawn) The monitoring device of claim 21 wherein the data transmission circuitry comprises a micro-controller and is configured to correct the output signal using sensor calibration coefficients.

24. (Withdrawn) The monitoring device of claim 22 wherein the signal acquisition circuitry is further configured to provide an input signal to the sensors.

25. (Withdrawn) The monitoring device of claim 24 wherein the input signal comprises input power.

26. (Withdrawn) The monitoring device of claim 21 further comprising a remote data processing system, and wherein the data transmission circuitry comprises a wireless transceiver to transmit the processing conditions to the remote system.

27. (Withdrawn) The monitoring device of claim 22 wherein the data transmission circuitry comprises an analog to digital converter.

28. (Withdrawn) The monitoring device of claim 21 wherein the data transmission circuitry comprises memory, and wherein the data transmission circuitry stores processing conditions in the memory.

29. (Withdrawn) The monitoring device of claim 26 wherein the remote system is configured to adjust the output signal using calibration coefficients.

30. (Withdrawn) The monitoring device of claim 21 wherein the transceiver transmits and receives RF signals.

31. (Withdrawn) The monitoring device of claim 21 wherein the transceiver transmits and receives IR signals.

32. (Withdrawn) The monitoring device of claim 21 wherein the transceiver transmits and receives sonic signals.

33. (Withdrawn) The monitoring device of claim 21 wherein the data transmission circuitry comprises one or more connectors to couple a remote system to the device with a communications cable.

34. (Withdrawn) The monitoring device of claim 26 wherein the remote system is a microprocessor controlled device.

35. (Withdrawn) The monitoring device of claim 21 wherein the processing conditions measured by the sensors comprise one or more of the following conditions: temperature, pressure, flow rate, vibration, ion current density, ion current energy, and light energy density.

36. (Withdrawn) The monitoring device of claim 21 wherein the flexible cable is a ribbon cable.

37. (Withdrawn) A device for monitoring processing conditions to be inserted by a robot hand into a sealed chamber, the device comprising:

a first member comprising sensors;
a second member comprising electronics;
a conductive cable or conductors connecting the first and second members,
wherein the first and second members fit into or onto a robot hand or hands, and
wherein the device can be extended to a second position by the robot hand such that the first member is inside the sealed chamber and the second circular member is outside the chamber, thereby not subjecting the electronics of the second member to the conditions within the chamber.

38. (Withdrawn) The device of claim 37 wherein in the second position the cable of the device is sealed at a door of the chamber.

39. (Withdrawn) The device of claim 37 wherein the electronics comprise a power supply, and an amplifier.

40. (Withdrawn) The device of claim 39 wherein the electronics further comprise a transceiver for communicating to a data processing device.

41. (Withdrawn) The device of claim 39 wherein the electronics further comprise an analog-to-digital converter.

42. (Withdrawn) The device of claim 37 wherein the device further comprises a data processing computer coupled to the second circular member.

43. (Withdrawn) The device of claim 37 wherein the first and second members are circular or rectangular.

44. (Currently amended) A system for sensing and recording or transmitting processing conditions comprising:

a substrate having a surface, the substrate comprising sensors to measure the processing conditions of the substrate at different areas of the substrate;

one or more electronics platforms mounted to the surface of the substrate comprising signal acquisition circuitry coupled to an output of the sensors; and

~~The system of claim 1~~ wherein the electronics platform is mounted to a recessed portion of the surface of the substrate, wherein the recessed portion and the platform are within a cavity and wherein the platform is substantially equal in mass to the removed cavity.

45. (Withdrawn) The process condition of claim 21 wherein in a first position the electronics module is above or below the substrate, and in a second position the electronics module and the substrate are displaced from each other such that the first and second perimeter do not intersect

46. (New) A system for sensing processing conditions comprising:
a substrate;
a plurality of sensors attached to the substrate;
an electronics platform electrically coupled to the plurality of sensors;
the electronics platform including at least one integrated circuit; and
the electronics platform mounted to the substrate by one or more legs that elevate the platform from the substrate.

47. (New) The system of claim 46 further comprising a gap between the electronics platform and the substrate.

48. (New) The system of claim 47 wherein the gap is from 1mm to 5mm.

49. (New) The system of claim 46 wherein the one or more legs are between 1mm and 5mm in height and between 0.05mm and 1.0mm in width.

50. (New) The system of claim 46 further comprising an electrical cable between the electronics platform and the substrate.

51. (New) The system of claim 46 further comprising electrical conductors integral to the one or more legs.

52. (New) The system of claim 46 wherein the electronics platform is mounted to the center of a surface of the substrate.

53. (New) The system of claim 46 wherein the one or more legs insulate the platform from high temperatures at the substrate.

54. (New) The system of claim 46 further comprising an additional electronics module, the electronics module and the additional electronics module being equidistant from the center of the substrate along a diameter of the substrate.
